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Filed: June 20, 2003

1. (currently amended) A passive infrared (IR) motion sensor, comprising:

at least a first IR detector outputting a first signal having a first frequency when a moving object passes in a detection volume of the first detector;

at least a second IR detector outputting a second signal having a second frequency when the moving object passes in a detection volume of the second detector, the second frequency being different than the first; and

a processing system receiving the first and second signals and at least partially based on the first and second signals, outputting a detection signal representative of the moving object, wherein the detectors have the same size as each other, the first detector being provided with a first optics defining a first focal length and the second detector being provided with a second optics defining a second focal length different than the first focal length, the second detector not having an optics of the same focal length as the first optics.

2. (original) The sensor of Claim 1, wherein the first and second detectors are housed separately from each other and the first detector monitors a first volume of space that is at least partially optically superposed with a second volume of space monitored by the second detector.

3. (original) The sensor of Claim 1, wherein each detector has two and only two respective elements with the elements being of equal size with each other and with the spacing between the elements of the first detector being the same as the spacing between the elements of the second detector.

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4. (currently amended) A method for discriminating a moving object in a monitored space from a non-moving object characterized by non-constant radiation, comprising:

receiving a first frequency from a first passive IR detector;

receiving a second frequency from a second passive IR detector, the first and second frequencies not being equal, the detectors being of equal size and configuration but having respective optics of different focal lengths such that the first detector has no optics of the same focal length as any optics of the second detector; and

outputting a signal indicating the presence of the moving object only if both the first and second frequencies are substantially simultaneously received, and otherwise not outputting the signal indicating the presence of the moving object.

5. (original) The method of Claim 4, comprising arranging the detectors in respective separate housings.

6. (original) The method of Claim 4, comprising optically superposing a first volume of space monitored by the first detector with a second volume of space monitored by the second detector.

7. (original) The method of Claim 4, wherein each detector has two and only two respective elements with the elements being of equal size with each other and with the spacing between the elements of the first detector being the same as the spacing between the elements of the second detector.

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8. (currently amended) A motion sensor, comprising:

at least a first passive IR detector having two and only two elements defining a first spacing therebetween, the first passive IR detector monitoring a first subvolume of space;

at least a second passive IR detector having two and only two elements defining a second spacing therebetween, the second spacing being equal to the first spacing and all four elements having the same size as each other, the second passive IR detector monitoring a second subvolume of space;  
and

an optics system at least partially optically superposing the first and second subvolumes, the optics system defining a first focal length associated with the first detector and a second focal length associated with the second detector but not with the first detector, the first and second focal lengths not being equal to each other.

9. (original) The sensor of Claim 8, further comprising a processor receiving signals from the detectors.

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Replace the paragraph on page 17, line 19 continuing to page 18, line 2 with the following:

In addition to determining motion, the logic, for certain of the sensors disclosed herein, may proceed to decision diamond 13[[0]]8 to determine whether at least a threshold number of coordinates are active at once. In other words, it is determined whether a threshold number of signals are simultaneously received from plural elements of the detectors, indicating a moving object that equals or exceeds a predetermined size. Generally, larger moving objects are human in response to whom it is typically desired to activate the alarm, open a door, or take some other action, whereas smaller moving objects typically are pets for whom no action generally is to be taken. Accordingly, for a larger object as determined at decision diamond 138, the logic moves to block 140 to indicate "target object" and, e.g., activate the alarm 22. On the other hand, if the object is not of sufficiently large size, no action will be taken.

Replace the paragraph on page 9, line 25 continuing to page 10, line 3 with the following:

Figure 2 also shows a functional diagram of the detectors 28, 30 with elements 32, 34 in accordance with pyroelectric detector principles summarized above, indicating the relative sizes, shapes, and polarities of the subvolumes monitored by the sensor (i.e., a projection of the sizes, shapes, and polarities of the elements) and illustrating that both detectors 28, 30 are mounted in a single housing 35g. Also, Figure 2 shows a schematic symbol diagram representing the elements 32, 34 of the detectors 28, 30 as capacitors with the dots indicating polarity.

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Replace the paragraph on page 12, lines 1-8 with the following:

In contrast, signal set (b) (reference numerals 56, 58, 60, 62) represents the detector outputs in response to varying-intensity non-focused white light from a stationary source. These signals arise because the responses of the "equal" and opposite elements only roughly cancel each other. As can be appreciated in reference to Figure 4, under these circumstances the frequencies of the element-summed signal 57 and 61 that are respectively output by the detectors 36, 38 are equal and, hence easily discriminated from the dual-frequency signals in set (a), thereby reducing the probability of false alarms arising from such varying-intensity non-focused white light.

Delete the material on page 11, lines 10-14.

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